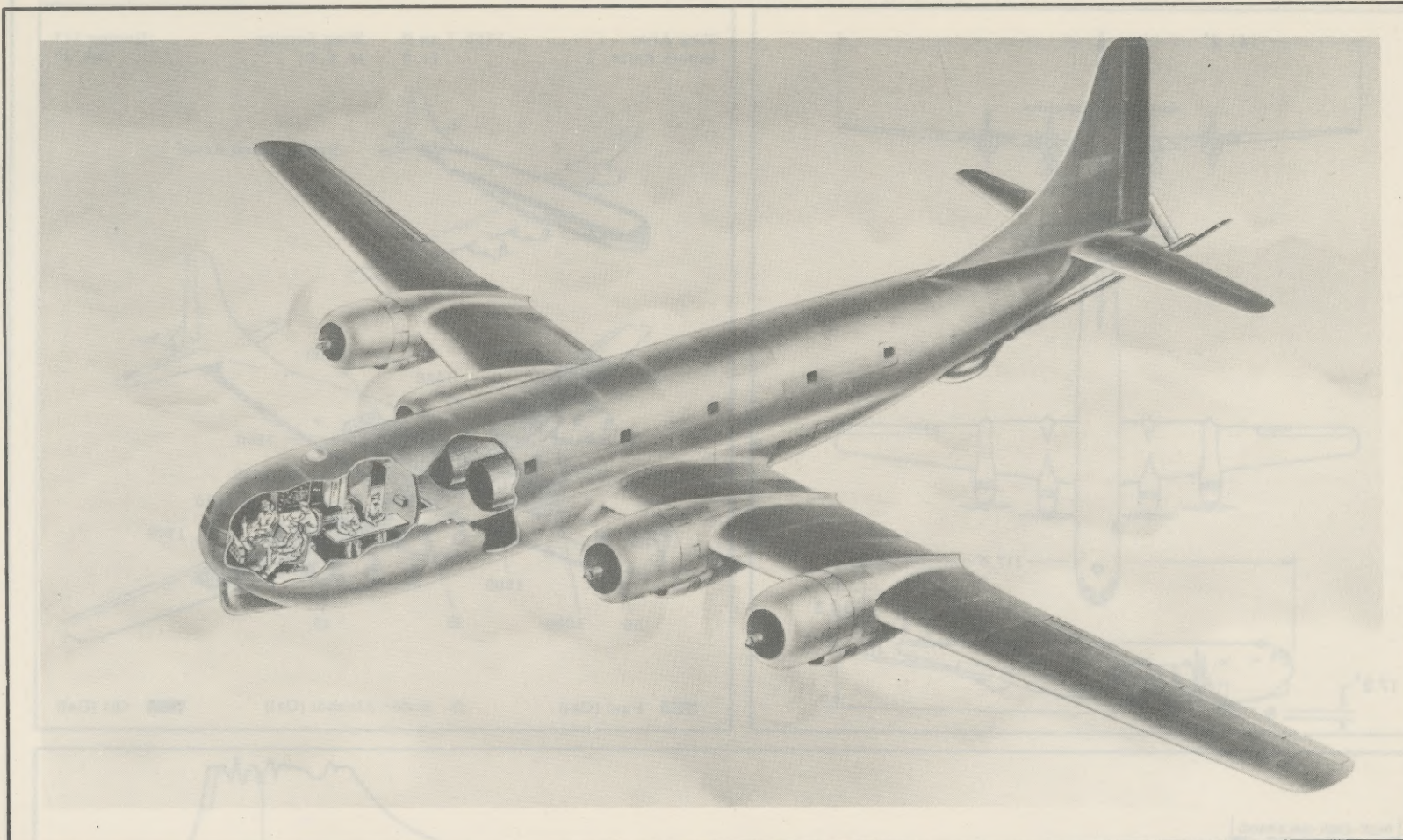


U N C L A S S I F I E D

SERVICE



Standard Aircraft Characteristics

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

KC-97E
STRATOFREIGHTER

Boeing

FOUR R-4360-65

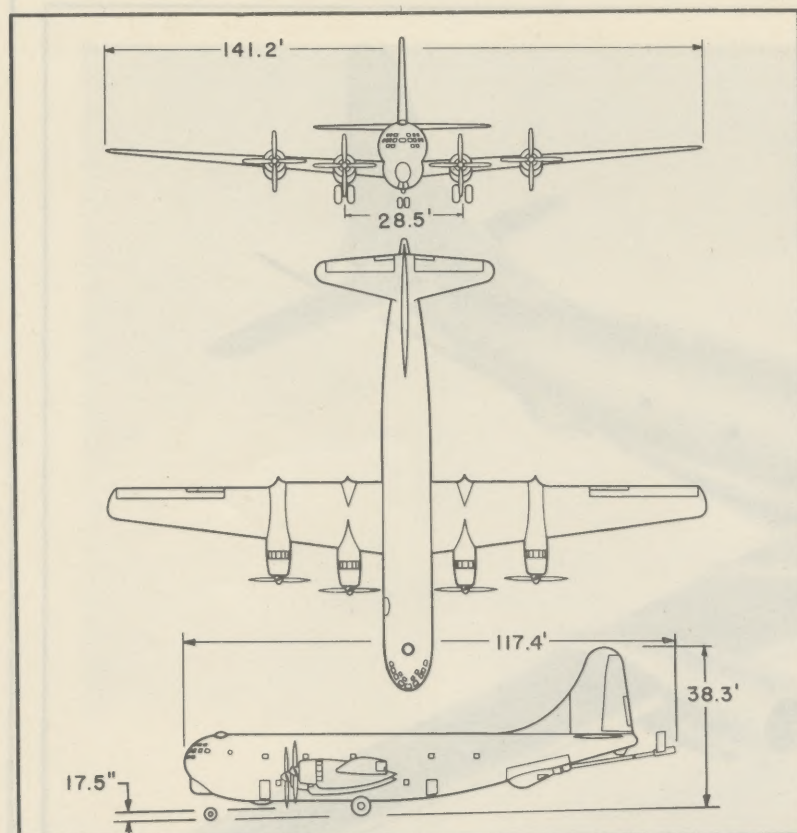
PRATT & WHITNEY

9 MAR 56

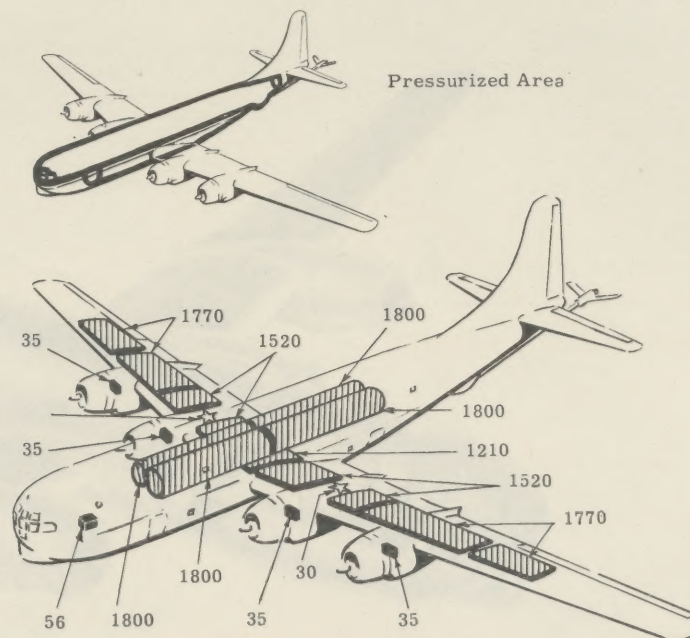
U N C L A S S I F I E D

KC-97E

UNCLASSIFIED



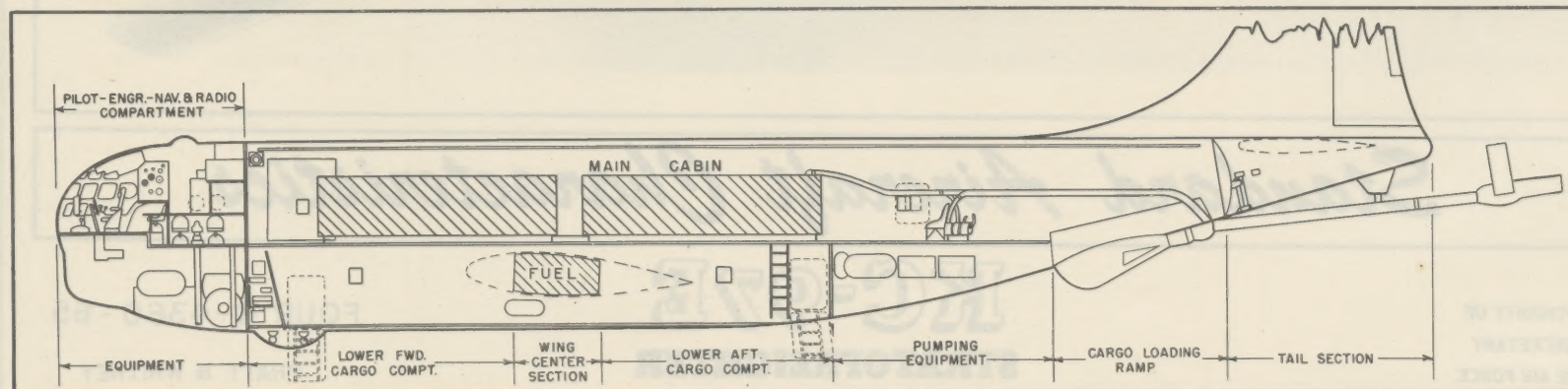
Wing Area 1768.7 sq ft Wing Section Boeing 117
 Aspect Ratio 11.5 M. A. C. 154.4"



▨ Fuel (Gal)

☆ Water Alcohol (Gal)

■ Oil (Gal)



KC-97E

UNCLASSIFIED

9 MAR 56

POWER PLANT

No. & Model (4) R-4360-65
 Mfr Pratt & Whitney
 Engine Spec No. A-7051F
 Superch 1 stg, 1 spd
 Turbo Superch (4) BH-4
 Turbo Mfr General Electric
 Red. Gear Ratio 0.375
 Prop Mfr Hamilton Std
 Blade Design No. *2J17B3-8W
 Prop Type Hydra, FF, Rev'r
 No. Blades 4
 Prop Dia 16'6"
 Augmentation Water/Alcohol
 *Used on aircraft AF51-183 thru 51-207.
 Blade 2J17F3-8W used on aircraft AF51-208 thru 51-242.

ENGINE RATINGS

BHP - RPM - ALT - MIN
 T.O. : *3500 - 2700 - S. L. - 5

 Mil: *3500 - 2700 - 500 - 30
 3250 - 2700 - 1000 - 30
 Nor: 2650 - 2550 - 5500 - Cont

* Wet

Note: Increased altitude performance is available through use of external turbo-supercharging

DIMENSIONS

Wing
 Span 141.2'
 Incidence (root) 4°
 (tip) 4°
 Dihedral 4°29'
 Sweepback (LE) 7°1'
 Length (overall) 117.4'
 Height 38.3'
 Height (fin folded) 26.6'
 Tread 28.5'
 Prop Grd Clearance 17.5"

Mission and Description

Navy Equivalent: None

Mfr's Model: 367-4-29

The principal mission of the KC-97E (Tanker Version) is the long range aerial refueling of either reciprocating or jet engine aircraft at high altitudes by the "Flying Boom" method. To increase the versatility of this airplane, the AFR equipment may be removed and the airplane converted to a cargo-troop transport configuration.

This airplane is equipped and delivered with "Flying Boom" type refueling equipment incorporating four 1800 gal fuel tanks installed in the main compartment, a boom operators compartment and the Boeing aerial refueling boom. The airplane fuel system is interconnected with the AFR system so that the center section wing tank may be used for carrying jet fuel, making a total capacity of 8410 gal of jet fuel which can be transferred to receiver airplanes. If gasoline is being transferred, all wing and AFR deck tank fuel, except fuel designated as reserve, may be transferred. Alternately, AFR deck tank fuel may be used to supplement wing tank fuel for long range ferry missions.

The KC-97E (Tanker Version) may be converted to a troop, cargo or casualty transport with no change required to the basic airplane structure. The equipment necessary to accomplish this conversion is supplied in a cargo conversion kit. When the AFR equipment is removed and the cargo kit installed, accommodations for 130 troops or 79 casualties and litters plus 4 medical attendants are provided.

The operating crew consists of pilot, co-pilot, navigator, radio operator, flight engineer and boom operator. The flight engineer serves as pump operator during refueling operations.

Development

Definitive Contract Jan 51
 First Flight Jun 51
 First Acceptance Jul 51
 Production Completed Mar 52

REFUEL EQUIP.

Telescopic Flying Boom
 Articulated Boom Nozzle
 Four (4) 1800 gal Fuel Tanks
 Rendezvous Radar

ELECTRONICS

Loran AN/APN-9
 Radio Compass AN/ARN-6
 Glide Path AN/ARN-5B
 Liaison AN/ARC-8
 HF Command Receiver . . BC-454B
 HF Command Set . . . AN/ART-13A
 VHF Command AN/ARC-3
 VHF Command AN/ARC-27
 Glide Path *AN/ARN-18

*Replaces AN/ARN-5B on aircraft AF 51-224 and subsequent.

WEIGHTS

Loading	Lb	L. F.
Empty	83,987(C)	
Basic	86,634(C)	
Design	150,000.	2.48
Combat	*102,205	
Max T.O. (overload)†	175,000.	2.00
Max T.O. (normal) †	150,000.	2.48
Max Land	†160,000	

(C) Calculated

* For Basic Mission

† Limited by strength

Note: See page 6, note (a) for normal operating weights.

FUEL

Location	No. Tanks	Gal
Wg, outbd 2		3540
Wgs, inbd 2		3040
Wg, ctr 1		1210
Fus, deck 4		7200
	Total	14,990
Grade		115/145
Specification		MIL-F-5572

OIL

Nac 4		140
Fus, fwd 1		56
	Total	196
Grade		1100
Specification		MIL-L-6082
		WATER/ALCOHOL
Wheel Well 2		(tot) 60

ELECTRONICS

Omni-Direction AN/ARN-14
 Search Radar AN/APS-42
 IFF AN/APX-6
 Marker Beacon AN/ARN-12
 Interphone AN/AIC-8
 Radio Altimeter SCR-718C
 Radio Altimeter AN/APN-1
 Rendezvous Radar . . . AB/APN-69
 Radar Beacon AN/APN-11
 Rendezvous Radar . . AN/APN-76

Loading and Performance—Typical Mission

C O N D I T I O N S		BASIC MISSION	NORMAL	REFUEL	FERRY RANGE
		I	II	III	IV
TAKE-OFF WEIGHT	(lb)	175,000	150,000	175,000	175,000
Fuel at 6.0 lb/gal (grade 115/145)	(lb)	42,000	37,022	25,896	85,896
Payload (Transfer fuel)	(lb)	43,896	23,874	60,000	None
Wing loading	(lb/sq ft)	101.7	87.1	101.7	101.7
Stall speed (power off)	(kn)	108	99	108	108
Take-off ground run at SL	(1) (ft)	6500	4150	6500	6500
Take-off to clear 50 ft	(1) (ft)	8150	5200	8150	8150
Rate of climb at SL	(3) (fpm)	555	900	555	555
Rate of climb at SL (one engine out)	(2) (fpm)	340	660	340	340
Time: SL to 10,000 ft	(3) (min)	19.0	11.5	19.0	19.0
Time: SL to 20,000 ft	(3) (min)	46.5	25.6	46.5	46.5
Service ceiling (100 fpm)	(3) (ft)	22,500	28,500	22,500	22,500
Service ceiling (one engine out)	(2) (ft)	5000	15,300	5000	5000
COMBAT RANGE	(4) (n. mi.)	—	—	—	5788
COMBAT RADIUS	(4) (n. mi.)	1000	1000	453	—
Average cruise speed	(kn)	202	200	198	191
Initial cruising altitude	(ft)	5000	5000	5000	5000
Target speed	(3) (kn)	311	312	303	—
Target altitude	(ft)	25,900	29,600	21,500	—
Final cruising altitude	(ft)	15,000	15,000	15,000	5000
Total mission time	(hr)	10.8	10.9	5.4	30.3
COMBAT WEIGHT	(lb)	102,205	101,961	95,625	94,184
Combat altitude	(ft)	25,900	29,600	21,500	5000
Combat speed	(2) (kn)	331	326	320	281
Combat climb	(2) (fpm)	1370	940	1750	2225
Combat ceiling (500 fpm)	(2) (ft)	33,050	33,100	34,200	34,500
Service ceiling (100 fpm)	(3) (ft)	35,400	35,450	36,350	36,550
Service ceiling (one engine out)	(3) (ft)	31,050	31,100	32,100	32,350
Max rate of climb at SL	(2) (fpm)	2420	2425	2615	2660
Max speed at 26,000 ft	(2) (kn)	331	331	334	334
Basic speed at 5000 ft	(2) (kn/ft)	279	279	281	281
LANDING WEIGHT	(lb)	91,959	91,705	91,144	94,184
Ground roll at SL	(ft)	2000	2000	1975	2040
Total from 50 ft	(ft)	2920	2920	2900	3000

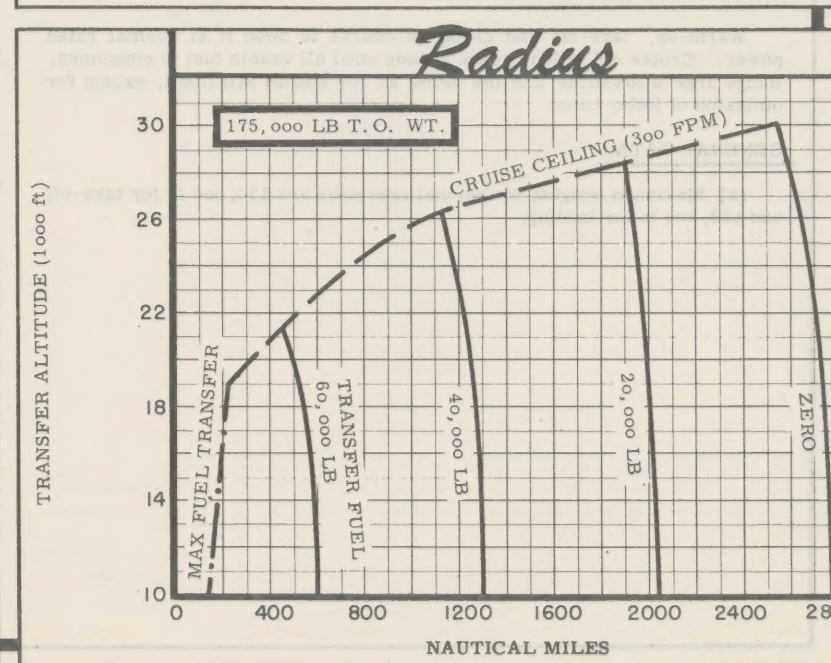
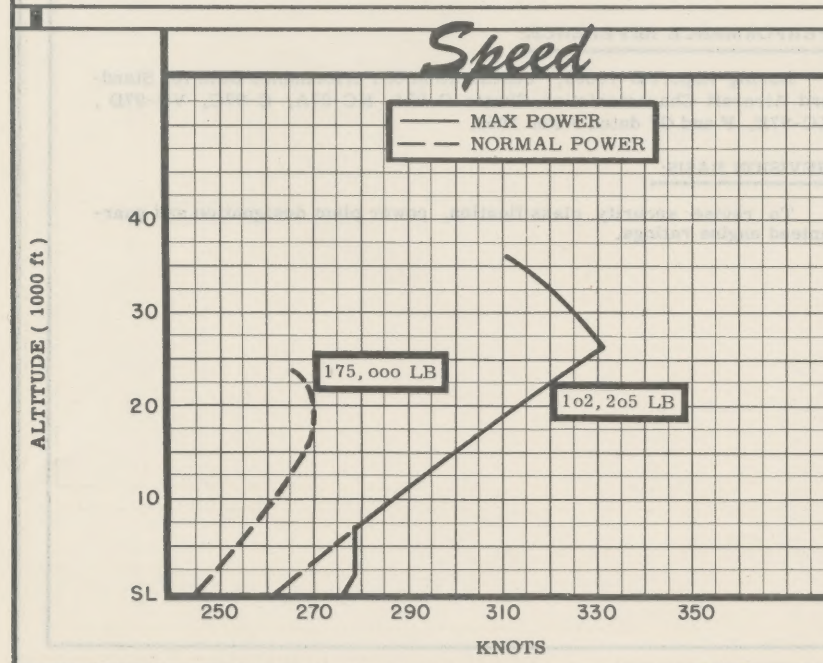
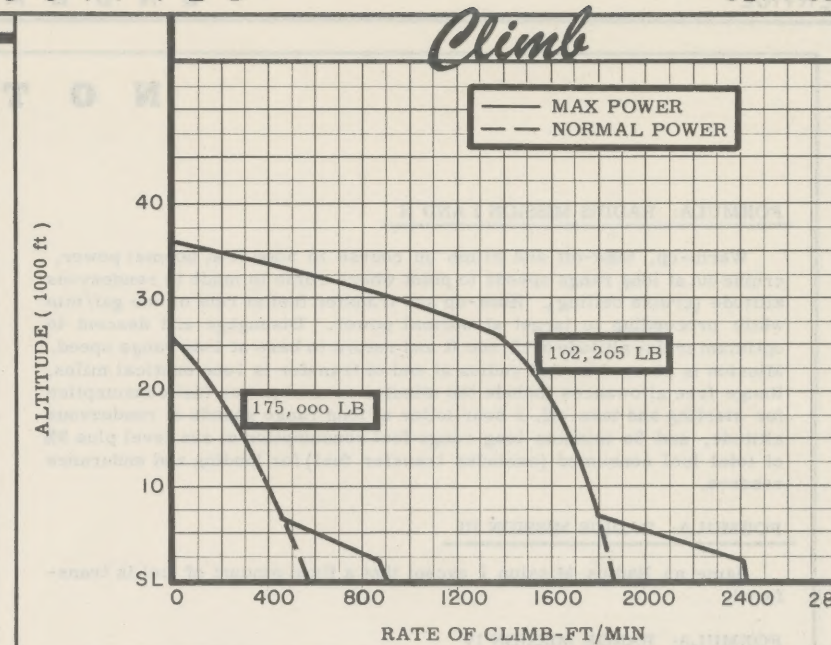
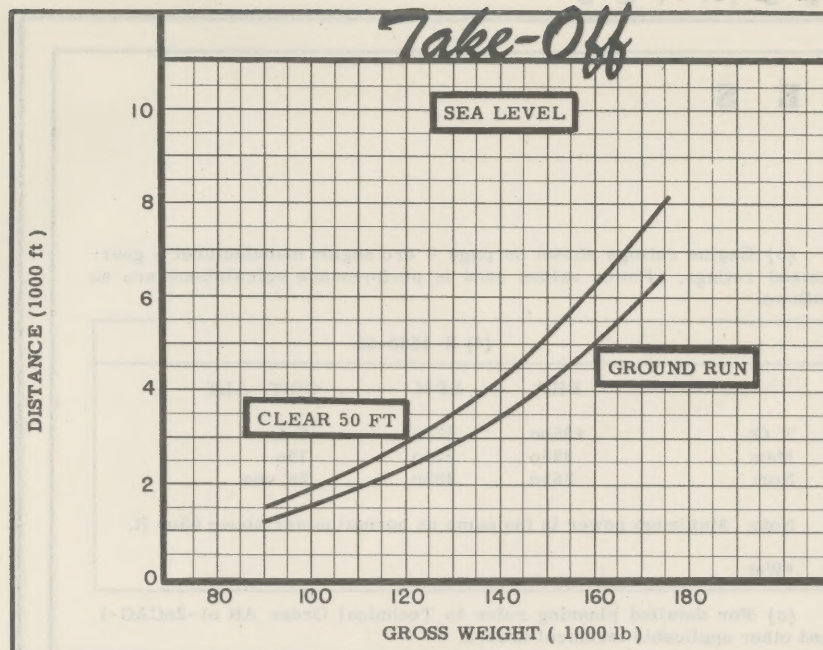
NOTES

- (1) T. O. power
 (2) Max power (same as normal power above 6500 ft)
 (3) Normal power

- (4) Detailed descriptions of RADIUS and RANGE missions are given on page 6

PERFORMANCE BASIS:

- (a) Data source: Flight Test
 (b) Performance is based on powers shown on page 6



N O T E S

FORMULA: RADIUS MISSION I AND II

Warm-up, take-off and climb on course to 5000 ft at normal power, cruise out at long range speeds to point where climb is made to rendezvous altitude (cruise ceiling). Hook-up and transfer fuel at rate of 600 gal/min while proceeding to target at normal power. Disengage and descent to optimum cruise altitude of 15,000 ft and return to base at long range speed. Mission is planned so that radius at end of transfer is 1000 nautical miles. Range free allowances include ten minutes normal power fuel consumption for starting and take-off, 1 hour loiter at long range speeds at rendezvous altitude, and 30 minutes long range fuel consumption at sea level plus 5% of total fuel consumed (excludes transfer fuel) for landing and endurance reserve.

FORMULA: RADIUS MISSION III

Same as Radius Mission I except that a fixed amount of fuel is transferred.

FORMULA: RANGE MISSION IV

Warm-up, take-off and climb on course to 5000 ft at normal rated power. Cruise out at long range speeds until all usable fuel is consumed. Range free allowances are the same as for Radius Mission I, except for omission of loiter time.

GENERAL DATA:

(a) Maximum weights for normal operation are 150,000 lb for take-off and 132,500 lb for landing.

(b) Engine ratings shown on page 3 are engine manufacturer's guaranteed ratings. Power values used in performance calculations are as follows:

(4) R-4360-65			
	BHP	RPM	CRIT. ALT
T. O:	*3500	2700	S. L.
Max:	3250	2700	750
Nor:	2650	2550	26,000
Note: Maximum power is the same as normal power above 6500 ft.			
*Wet			

(c) For detailed planning refer to Technical Order AN 01-20CAG-1 and other applicable technical orders.

PERFORMANCE REFERENCE:

Boeing Report D-13086, "Justification of Performance Data for Standard Aircraft Characteristics Charts C-97A, KC-97A, C-97C, VC-97D, KC-97E, F and G" dated 9 Feb 1953.

REVISION BASIS:

To revise security classification, power plant designation and guaranteed engine ratings.